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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/688,791

10/17/2003

Jay S. Teich

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7590

06/16/2006

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EXAMINER

SHEN, BIN

ART UNIT

PAPER NUMBER

1655

DATE MAILED: 06/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/688,791

Applicant(s)

TEICH ET AL.

Examiner

Bin Shen

Art Unit

1655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 April 2006.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-39 is/are pending in the application.  
4a) Of the above claim(s) 14-16 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-13, and 17-39 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_

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### **DETAILED ACTION**

Applicant's election without traverse of Group I, claims 1-39, in the reply filed on 4/17/2006 is acknowledged. Claims 14-16 are considered nonelected because they are dependent on nonelected species and thus are withdrawn from further consideration.

Only claims 1-13 and 17-39 are therefore presented for examination on the merits.

### ***Specification***

1. The use of the trademark "Snapwell" on page 22 has been noted in this application. They should be capitalized wherever they appear and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 1-13 and 17-39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 is rendered vague and indefinite by the phrase "a method of analyzing

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cells". The beginning of the claim does not agree with the end of the claim, thus the claim is confusing. It would be clearer if applicants use "a method of analyzing a constituent related to the cells" at the beginning of the claim 1.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-7, 10, 17-20, 22, 26, 27, 34, 35, 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Seaver et al. (J Bacteriol. 183:7182-7189, 2001).

Seaver et al. teach a method of measuring hydrogen peroxide fluxes in *E. coli*. *E. coli* cells grown (suspended in the media) overnight in LB broth (in a flask-vessel), diluted to 0.01 OD 600nm in fresh LB (read on as increasing the reduced volume of media about the cells to substantially the original volume and/or perfusing/replenishing additional media through vessel), and grown for six generations (read on as altering an environment of at least a portion of the cells prior to reducing the original volume of the media), pelleted and resuspended at 1/20 (about 5%) of the original culture volume. At various time intervals, H<sub>2</sub>O<sub>2</sub> is quantitated (see page 7183, Materials and Methods, 2<sup>nd</sup> paragraph). H<sub>2</sub>O<sub>2</sub> flux rate is calculated based on the first and second concentration (see page 7138, Materials and Methods, 5<sup>th</sup> paragraph). Same measurement is performed with *E.*

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*coli* cell extract, where cells are resuspended and diluted in PBS and  $H_2O_2$  is then added (read as altering an environment/exposing to at least one of a drug of at least a portion of the cells after reducing the original volume of media-see Materials and Methods, end of 2<sup>nd</sup> paragraph), the rate of change of concentration of the constituent-  $H_2O_2$  is sensed through hydroperoxidase I (see Materials and Methods, 3<sup>rd</sup> paragraph and Fig. 1).

Therefore, the cited reference is deemed to anticipate the instant claims above.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-13 and 17-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seaver et al., in view of Criddle et al. (Analytical Biochem. 194:413-417, 1991) and Ferguson et al. (Analytica Chimica Acta 340:123-131, 1997), and further in view of Terasaki et al. (USPN 4599315).

Seaver et al. teach what is above.

Seaver et al. do not teach the analysis of  $O_2$  of adherent eukaryotic cell from tissue, and the use of a fluorescent sensor as a barrier.

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Criddle et al. teach the use of sensors in measuring CO<sub>2</sub> production and O<sub>2</sub> consumption with corn tissue/cells (see abstract and page 415, 1<sup>st</sup> paragraph). Criddle et al. specifically describe the use of a calorimetric equipment-including sealing/covering the vessel, stirring a portion of the media (see Fig. 1). The sensing of concentrations of different constituents (CO<sub>2</sub> and O<sub>2</sub>) and the relationship determination between them is described on page 415, left column 1<sup>st</sup> full paragraph.

Ferguson et al. teach a simultaneous monitoring of pH, CO<sub>2</sub> and O<sub>2</sub> using an optical imaging fiber (sensor) during a beer fermentation (see abstract). Fluorescence measurements of each constituents with the multianalyte sensor is described on page 125, under 2.3. Detection system. Parameter of cell viability is described as "once yeast was added, immediate production of CO<sub>2</sub> and consumption of O<sub>2</sub> were observed"-see page 130, right column lines 6-7.

Terasaki et al. teach a multiwell plate apparatus with wells that receives barriers (rods 54-see column 4, line 56-68) for reducing the volume.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Seaver et al. by simultaneously monitoring of pH, CO<sub>2</sub> and O<sub>2</sub> of cells (as taught by both Criddle and Ferguson) using fluorescence sensor (as taught by Ferguson) in a sealed vessel (as taught by Criddle and Terasaki). One would have been motivated to measuring pH, CO<sub>2</sub> and O<sub>2</sub> of cells using fluorescence sensor in a sealed vessel to improve Seaver's method because Criddle et al. teach that the combined measurements of CO<sub>2</sub> and O<sub>2</sub> fluxes provide important information on bioenergetic efficiency

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of cell metabolism and that these data can also suggest possible shifts in metabolic pathways or substrate sources as cells develop, or are exposed to effectors, inhibitors, and environmental factors (see abstract), Ferguson et al. teach the fabrication and performance of a multianalyte sensor for simultaneous measurement of pH, CO<sub>2</sub> and O<sub>2</sub> in a single optical setup (simplifying the instrumentation-see page 124, 2<sup>nd</sup> paragraph), and Terasaki teach an improved apparatus that increase optical path through the test solution in order to maximize color intensity for measurement (see column 2, lines 7-22), and would reasonably have expected success in view of cited reference's teaching.

From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

### **Conclusion**

5. No claim is allowed.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Certain papers related to this application may be submitted to Art Unit 1636 by facsimile transmission. The faxing of such papers must conform with the notices published in the Official Gazette, 1156 OG 61 (November 16, 1993) and 1157 OG 94 (December 28, 1993) (see 37 C.F.R. § 1.6(d)). The official fax telephone number for the Group is 571-273-8300. NOTE: If Applicant does

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submit a paper by fax, the original signed copy should be retained by applicant or applicant's representative. NO DUPLICATE COPIES SHOULD BE SUBMITTED so as to avoid the processing of duplicate papers in the Office.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

Any inquiry concerning rejections or objections in this communication or earlier communications from the examiner should



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be directed to Bin Shen, Ph.D., whose telephone number is (571) 272-9040. The examiner can normally be reached on Monday through Friday, from about 9:00 AM to about 5:30 PM. A phone message left at this number will be responded to as soon as possible (i.e., shortly after the examiner returns to her office).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Terry McKelvey can be reached at (571) 272-0775.

*B Shen*

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A handwritten signature in black ink, appearing to read 'M. Meller', with a long horizontal flourish extending to the right.

**MICHAEL MELLER  
PRIMARY EXAMINER**